A

PROBATIONARY ESSAY

ON

INJURIES OF THE

MALE URETHRA;

SUBMITTED,

BY AUTHORITY OF THE PRESIDENT AND HIS COUNCIL,

TO

THE EXAMINATION

OF THE

Royal College of Surgeons of Edinburgh,

WHEN CANDIDATE

FOR ADMISSION INTO THEIR BODY,

IN CONFORMITY TO THEIR REGULATIONS RESPECTING THE ADMISSION OF ORDINARY FELLOWS.

BY

BENJAMIN BELL,

MEMBER OF THE ROYAL COLLEGE OF SURGEONS IN LONDON, AND LATE HOUSE SURGEON TO ST BARTHOLOMEW'S HOSPITAL.

EDINBURGH:
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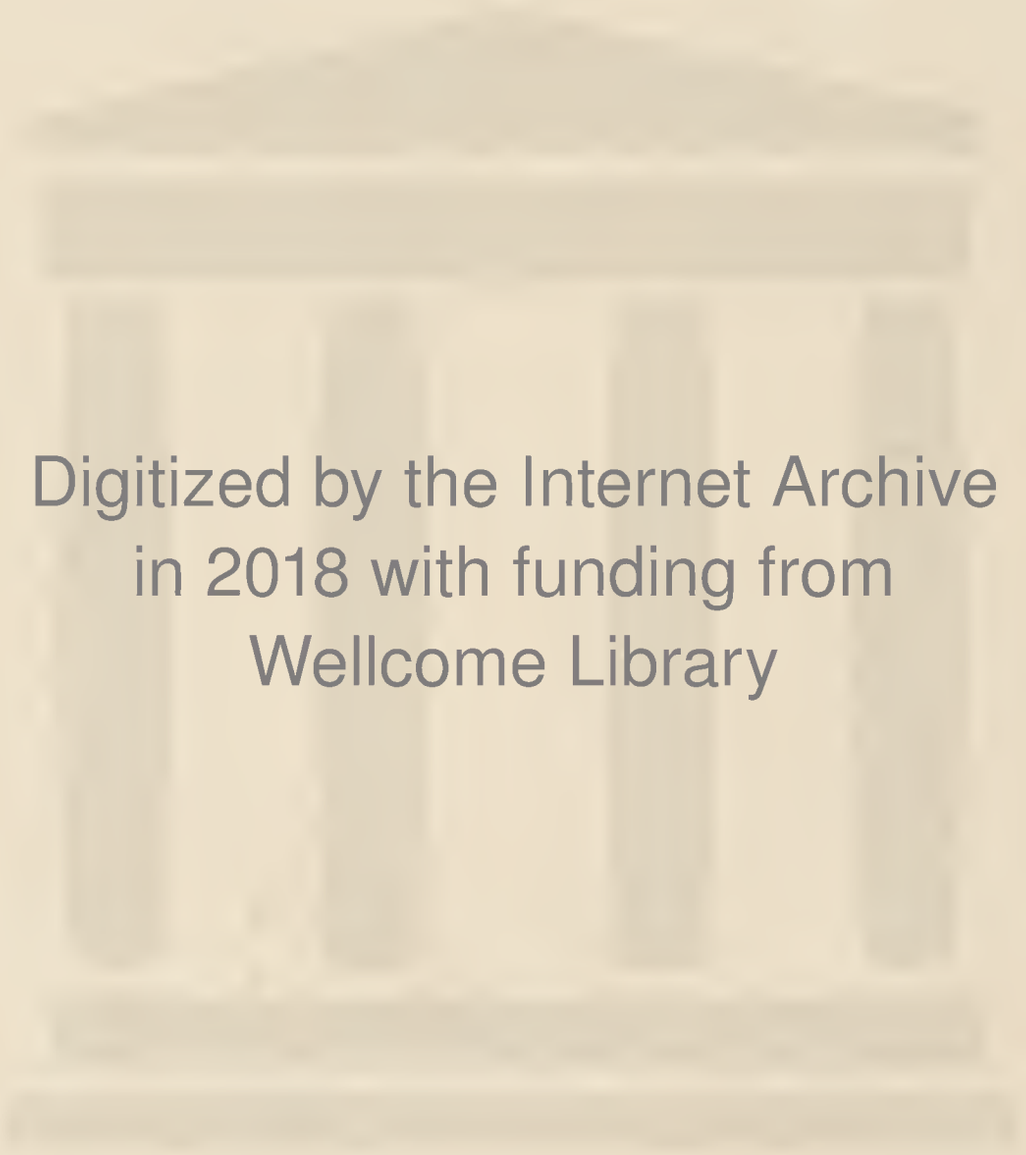

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TO

DR JAMES HAMILTON, SEN.

THIS SHORT ESSAY

IS MOST AFFECTIONATELY AND RESPECTFULLY DEDICATED BY

THE AUTHOR.

ON INJURIES

OF

THE MALE URETHRA.

Injuries of the Male Urethra from external violence, though seldom met with in practice by the majority of medical men, do still claim, for many reasons, the most accurate and serious consideration of every surgeon. They belong to those irregular departments of surgery which, from their very nature, occupy a subordinate place both in systematic books and lectures; but, at the bedside of our patients, they become invested with an interest and a real importance which the practitioner himself can alone fully appreciate. It is with this conviction that I have ventured to submit the following observations to the notice of the Royal College, hoping that the subject to which they refer may not be deemed unsuitable for a Probationary Essay.

The Male Urethra is of course exposed occasionally, like most other parts of the body, to a great variety of injuries, of all kinds and degrees, which it would be fruitless and impossible either to describe or to anticipate. For many of these casual occurrences, no vague and general description can at all prepare us; and we must, therefore, regulate our proceedings at the time, by those acknowledged principles of surgery which experience has laid down. But, it so happens, that there is one class of injuries, marked and definite in their nature, which not only occur oftener, and prove more dangerous, than any others to which the urethra is exposed, but are produced, almost invariably, in one particular way. The accidents to which I now allude, are those lacerations of the urethra which are produced, in greater or less severity, by falls and blows upon the perinæum; and to the consideration of these, our attention shall be mainly directed upon the present occasion. The following particulars of a case which came under my notice, not long ago, will probably convey a better idea of the accident than any general description.

On the 22d of August, 1833, a boy about sixteen years of age, in a manufactory near London, stumbled, while at work, and struck his perinæum upon a large iron retort which lay on the ground. When admitted into St Bartholomew's Hospital, within half an hour after the accident had occurred, the perinæum was considerably swollen, dark-coloured, hot, and tender upon pressure. The

serotum also was swollen in some degree, and slightly discoloured. He had been seized immediately with an urgent desire to make water, which still continued; but all his efforts were unavailing, and blood only trickled from the urethra at each repetition of the attempt. Still, however, the bladder did not appear, upon examination, to contain much fluid. Leeches and fomentations were applied to the perinæum, but no relief was experienced; the tension seemed to be increasing, and the bladder was now becoming very rapidly distended, so that, about four hours after his admission, the gentleman who acted as dresser made several unsuccessful attempts to introduce an elastic gum catheter. The instrument seemed to quit the natural passage, and blood now flowed from the urethra in considerable quantity. Mr Stanley, who was then sent for, succeeded, upon his arrival, with no great difficulty, in conveying a silver catheter * into the bladder, and drew off three pints of urine. As great tension still continued in the perinæum, and more than a possibility existed that urinary effusion had taken

* The catheter employed upon this occasion by Mr Stanley, appears to be peculiarly well adapted for many cases of retention, where unusual difficulty is experienced in performing the operation. It possesses, as nearly as possible, the same degree and length of curvature as the fixed portion of the healthy urethra. It was constructed after numerous accurate measurements made upon the dead body. The advantage of this catheter does not consist in its being more easily introduced along the sound urethra, but in this, that one who knows the anatomy well, may employ an instrument so shaped with much more confidence and precision than any other, in many difficult cases, where anatomical knowledge can be turned to good account.

place, an incision was made along the raphè without delay, of one inch and a half in length. The catheter was at once freely exposed by this incision, shewing distinctly that the urethra had suffered an extensive laceration; but no urinous fluid, and very little blood, escaped from the wound. The catheter was then withdrawn, and fomentations were again applied to the perinæum. On the following day, it was very doubtful if any urine had come away, and the bladder again rose towards the umbilicus. After many fruitless attempts, the catheter was at length re-introduced, and the bladder once more relieved—the retention of urine being now conceived to depend upon the presence of some accidental clots of blood in the wounded urethra.

From this period, every thing proceeded in the most favourable manner; the instrument being retained in the bladder for a few days, and then discontinued. Little constitutional disturbance was experienced, and the wound very speedily presented a healthy granulating surface, although much of the urine continued to flow over it for several weeks. On the 6th of November, the wound in the perinæum had been healed almost completely for some weeks, but a few drops of urine still made their appearance occasionally. At this time, the natural passage was so much contracted at the seat of the cicatrix, as to prevent the smallest catgut bougie from being passed into the bladder. He left the hospital in a few days, but attended as an out-door

patient till the middle of December, when we saw no more of him. At his last visit, the gentleman who had charge of him succeeded, for the first time, in introducing a small sized silver catheter; his stream of urine had undergone considerable improvement, and the wound in the perinæum was then completely healed.

It will be observed, that although a suspicion was at first entertained of urinary effusion having taken place, the retention of urine was not only proved by the incision in the perinæum to be complete, but really continued as obstinate as ever, for many hours after the injury had been received. This is a circumstance of much pathological and practical interest, and one which appears to be almost an invariable characteristic of all severe injuries to the perinæum. Effusion of urine is mentioned, indeed, by systematic authors, as the most distressing effect which we are to expect from lacerations of the male urethra; but we shall find, if I mistake not, upon referring to recorded cases, that the more immediate and pressing danger generally consists in an obstinate retention of urine. This symptom may vary much in the period of its duration, according to the original violence of the force applied, to the age and constitutional habit of the patient, and also, to the remedial measures which we employ; but it seems to be a fact, well ascertained by experience, that, in the first instance at least, we may look for more or less retention of urine in almost every case of injured urethra. That this is a salutary and wise provision

of Nature is strikingly evinced, by the disastrous effects of urinary infiltration in many other cases of diseased or injured urethra. Now, as our plan of treatment must be sometimes materially influenced by a knowledge of this pathological fact, it may be useful to inquire shortly into those causes upon which this tendency to retention of urine most probably depends.

Sir Charles Bell, in his work * upon the urinary organs, has related the case of a young man who fell through a sky-light window, and came astride upon the balustrade of the staircase. Complete retention ensued; the bladder was greatly distended, but the catheter could not be introduced. As it was conceived that this difficulty might depend on the distended and unyielding state of the perinæum from extravasation of blood, a free incision was accordingly made, and a quantity of blood evacuated, after which the catheter passed into the bladder. Upon this case the author makes, among others, the following observations:—"My reader will observe a consequence of the injury which is kept out of view—that the obstruction of urine does not proceed directly from the extravasation, nor is it owing to pressure upon the canal. It is the injury which the wound inflicts, and the consequent disorder and loss of consent among the muscles of the perinæum and neck of the bladder, which prevent the discharge of urine."

* *Treatise on the Diseases of the Urethra*, &c. Edit. 1820. P. 284.

A similar explanation of the same interesting symptom is offered by Mr Green, with reference to a well-marked case which came under his care some years ago at St Thomas's Hospital, in which the retention of urine continued for three successive days, and was only overcome at last by a prompt and judicious employment of surgical means.

We might naturally imagine, upon a superficial view of the matter, that the copious extravasation of blood which usually takes place upon these occasions among the muscles of the perinæum, must of itself so far restrain their actions, and compress the urethra, as to induce retention of urine. But we find, upon referring to the history of cases, that, not unfrequently, the patients have still continued incapable of emptying the bladder for hours, or even days, after all tension in the perinæum had been removed by deep and free incisions. Indeed, two cases are related by Mr John Shaw, in which the bladder was actually punctured above the pubes on account of the retention of urine which still continued, even after the seat of laceration had been laid bare by a cut in the perinæum.† It must be obvious, that the presence of coagula in the vesical portion of the lacerated urethra, or mechanical compression of that tube by extravasated blood, could present no adequate obstacle to the indefinite effusion of urine, had that fluid once escaped from the neck of the bladder; because, in cases where the urethra

* *Lond. Medic. and Phys. Journal.* New Series. Vol. II. p. 44.

† Sir C. Bell, *Treatise*, &c. p. 287.

has given way behind a stricture, we do not find that any local tension, which the urine already effused may occasion, is at all sufficient to arrest its fatal progress amidst the surrounding textures.

A very marked and interesting point of distinction is thus established, between ruptures of the urethra from external violence and those which follow the inroads of disease. In illustration of this, I shall relate, before leaving this part of the subject, some particulars of a case which, though not uncommon, impressed me strongly at the time, from its happening almost simultaneously with that already detailed.

A man, twenty-eight years of age, pale, and of spare habit, came to St Bartholomew's Hospital with a retention of urine which had continued for nearly twenty-four hours. He stated that a week before, while using violent efforts to raise a very heavy weight, he felt something give way suddenly in the perinæum, and shortly afterwards observed a small swelling opposite the scrotum. He had never experienced previously any symptoms of disease in the urethra, with the exception of a slight gonorrhea five years before, and had never particularly noticed any change or diminution in his stream of urine. The swelling in the perinæum appeared to enlarge every time he attempted to make water, which now came away only in drops, and not without pressure with his fingers upon the swelling. Two days previously to his admission, he had frequent shiverings, and felt considerable uneasiness in the peri-

næum. On the day following, pressure upon the swelling at length failed to procure a discharge of urine from the urethra, as had been the case hitherto, and he applied to a surgeon. This gentleman had bled him from the arm, and made several fruitless and long-continued attempts to pass a catheter into the bladder. Upon his admission into the hospital, no doubt existed that the urethra had given way, both from the sensations conveyed by the catheter, and from the extreme fulness and tension which now prevailed in the perinæum. A free incision was accordingly made into the seat of tumefaction, when nearly a pint of urine gushed from the wound. This, however, did not relieve the bladder, nor could the patient discharge even now more than a drop or two at once by any voluntary effort. The ragged opening in the urethra being then more freely exposed, a catheter was conveyed through it into the bladder without much difficulty, and egress was thus afforded to a large quantity of high-coloured and offensive urine.

There can be little doubt that disease had long existed in this man's urethra, but its progress had been so slow and imperceptible as to elude his own observation. Individuals in his rank of life pay comparatively small attention to any feelings of uneasiness which do not amount to absolute pain, so that, in referring to the history of their diseases, they can seldom furnish more than the scantiest materials for filling up the many successive stages which often intervene between the first trivial

accession of disease and its final accumulation. It is worthy of remark, that although the effusion of urine was checked, or at least retarded, for some days, apparently by a process of adhesive inflammation, it was only prevented towards the last from extending, with fearful rapidity, in all directions, by the almost complete retention which still maintained its ground after the incision had been made. This continued retention, an unusual circumstance in such cases, could not, in this case, depend upon any mechanical obstruction ; and it appears, therefore, to afford an additional illustration of the proximate cause of that retention of urine which so generally supervenes after lacerations of the urethra from external violence.

I have not as yet made any particular allusion to the situation and anatomical characters of these injuries to the urethra. They are commonly occasioned by a violent blow or fall upon the perinæum ; but it is not improbable, that the severity of the accident is often materially increased or diminished by the state of preparation for it, in which it finds the individual. A man, somewhat beyond the middle age, was riding a horse without a saddle in Smithfield market, when the animal gave a sudden start and threw him upon its withers. No wound existed in the perinæum, but the serious nature of the injury was at once suspected, though not to its full extent. He died in about twenty-four hours after the accident. Upon dissection, the ossa pubis were found to be separated more than an inch from

each other. The urethra remained attached by the triangular ligament to the bone upon the right side, while the ligament itself was detached upon the left. The prostate gland was torn away completely from the neck of the bladder.

The preceding case may serve to shew us, how little we can estimate in general the relation that obtains betwixt any injury to the perinæum, and the cause which produced it; and it may prepare us, at the same time, to regard even the most trifling, to all appearance, of such cases, with more than common attention.

From the copious extravasation of blood into the perinæum, and the free hemorrhage which usually takes place from the external orifice, we might be disposed to infer, a priori, that the bulb of the urethra is oftener the seat of laceration than any other portion of the canal. It is not easy to determine this point with accuracy under ordinary circumstances, and it has, consequently, been much overlooked in the majority of those recorded cases which I have had an opportunity of consulting. Two interesting cases are recorded in the *London Medical and Physical Journal*,* which occurred in St Bartholomew's Hospital, under the care of Mr Earle. In both of these cases, where the accident happened much in the same way—by a fall upon the perinæum—the injury was distinctly found to exist in the bulbous portion; and Mr Earle is of opinion, I believe, that this is the most usual situation.

* New Series, vol. iv. p. 315.

Two additional cases—to one of which I have already referred—are also published in a different volume of the same journal.* In one of these, which was treated in Guy's Hospital by Mr Travers, "the urethra appeared to have been completely divided at the bulb, one-third of its length from its termination in the spongy portion." In the other, which came under the care of Mr Green, at St Thomas's Hospital, the urethra was believed to be torn through, near to the face of the prostate gland; and it was distinctly seen, that partial laceration had also taken place of the triangular ligament.

A case of ruptured urethra, to which I shall probably refer again in a subsequent part of this Essay, is detailed in an early number of the *Lancet*, in which, also, the laceration existed in the immediate neighbourhood of the prostate gland.†

These are almost the only cases in which I have found any distinct and accurate account of the situation where the injury had occurred; but they may suffice to shew us, that all parts of the urethra, from the bulb to the prostate gland, are more or less exposed to such lacerations. The degree of injury which the canal has suffered, must vary, of course, in different instances; but it is worthy of remark, how frequently it happens that the parietes of the urethra, if not torn across completely, do at least present an extensive breach of continuity at some point of their circumference. Cases are,

* New Series, vol. ii. p. 46.

† *Lancet*, July 30, 1825.

indeed, occasionally met with,* in which the entire thickness of the canal does not appear to have given way; but these, if overlooked at first, may, in the end, become equally disastrous with others which originally excited greater interest. They are likely to be succeeded by stricture of the most obstinate nature, and by all those distressing consequences which follow in its train. †

We may now proceed to offer a few observations upon the surgical treatment of these injuries.

It is obvious, that to establish a free passage for the urine is the grand object to which our attention must be first and mainly directed. Because it

* Howship. A Practical Treatise, &c. p. 281, case 48.

† It would appear that *suppression* of urine occasionally supervenes upon severe injuries to the urethra or bladder. A case of lacerated urethra, from a kick on the perinæum, occurred at St George's Hospital, in July, 1825, where this unfortunate symptom carried off the patient within three days after the injury had been received. The urethra was found, upon dissection, to have been extensively ruptured between the bulb aud prostate gland; and the cellular tissue surrounding that part, and in the perinæum, was loaded with a profusion of dark coloured coagulated blood, but without any admixture of pus or urine in it. The bladder was quite empty, and in a perfectly healthy state; nor could any disease be observed in the kidneys, or in any of the viscera of the abdomen.—*Lond. Med. and Phys.* Second Series, vol. ii. p. 429.

About twelve months ago, a child, upon whom a large empty cask had fallen from a cart, was brought to St Bartholomew's Hospital, with symptoms of serious internal injury. No water was passed after the accident, but the poor child lived for three whole days, and then appeared to die in a state approaching to coma. The bladder had been ruptured at its anterior and upper part, where there is no investment of serous membrane. It was quite empty, and we had great doubts if any urine had been effused into the cellular tissue. The kidneys and ureters presented no appearance of injury or disease.

appears that an obstinate retention of urine within the bladder is the earliest and most urgent symptom that ensues, and were this symptom spontaneously or readily relieved, a destructive and rapid effusion of urine would speedily take place in all the neighbouring textures. The patient is thus exposed to two opposite dangers, — to retention of urine on the one hand, to effusion on the other ; and it therefore becomes his surgeon to act in all such cases with promptitude and decision.

The first measure which would naturally suggest itself under such circumstances, is an attempt to introduce a catheter into the bladder. This attempt will often prove unsuccessful, and should not be long persevered in, for several reasons. Much additional injury may thus be inflicted upon the torn urethra ; and it is possible to effect our object, with greater ease and safety, after adopting a preliminary measure to which I shall presently allude. If we succeed, however, in passing the catheter without much difficulty, an important point is achieved ; because all immediate danger is at once averted, and our patient greatly relieved. But, supposing that we fail in effecting our purpose, it will then be necessary to relieve the distended bladder in some other way. In selecting the appropriate means of doing so, we must take into account, not only the mere temporary object of withdrawing the accumulated urine, but the danger also, which still remains, of that fluid becoming afterwards infiltrated into the neighbouring textures,

already bruised, and tense, and prone to inflammation.

A free and bold incision into the loaded perinæum, which shall expose the ruptured portion of the urethra, appears to be more likely than any other measure to avert these impending evils. This by itself will not prevent or remove the retention, but it will assist us materially in conveying an instrument into the bladder, and will afterwards afford a free and satisfactory outlet for the urine.

The patient should be placed upon a table, in the same position as for the operation of lithotomy, so that the surgeon may conduct his proceedings with accuracy and precision. A catheter being carried down to the seat of laceration, an incision should then be made upon it, along the raphè of the perinæum. An irregular cavity, filled with coagula and serum, is thus laid open, and the extremity of the instrument may be seen or felt projecting into it, through the rent in the urethra. The vesical orifice of the canal is generally detected without much difficulty or delay, and the bladder may be relieved at once, if necessary, by means of a female catheter.

The most essential part of the operation is now completed; but the tendency to retention of urine still continues. In what way is this to be managed? Probably the best mode of procedure is to introduce into the bladder an elastic gum, or even a silver catheter; and this may be now effected with greater facility than before, since the incision has been made

into the perinæum. The instrument should then be properly secured* in its place, and allowed to remain for a few days at least, till the muscular sympathies of the bladder and urethra are fully restored. When this very desirable improvement has taken place, there is little necessity, in most cases, for any farther interference, provided our incision in the perinaeum has been sufficiently free. There is no fear of effusion; the urine escapes partly by the wound and partly by the urethra, and Nature will complete the cure without our assistance. But we must here notice a very important practical question connected with this part of the inquiry. Is any advantage gained, in the subsequent history of these cases, by the continued use of an instrument while the healing processes are going on? This question can be properly answered, only by an appeal to experience; but I fear much that the data necessary for the purpose are scarcely to be obtained.

In the case of the boy, related in a former page, all instruments were entirely thrown aside after the first few days; and we find that great narrowing of the canal existed ultimately.

An interesting case† of ruptured urethra is

* A very convenient mode of securing an instrument in the bladder is that adopted by the French. A metallic ring, which may be covered with cloth, and should be large enough to encircle the penis under all circumstances, is passed over that organ, so as to rest lightly on the pubes, and then secured by means of four long tapes surrounding the pelvis. Four shorter pieces of narrow tape being fastened to it, at equal distances in front, are then tied on either side to the small rings of the catheter.

† *Oeuvres Chirurgicales*, t. iii. p. 207.

related by the editor of Desault's works, which was treated by that distinguished surgeon in the Hotel Dieu. Upon the patient's admission into that institution, the bladder was easily relieved by means of a catheter, which being then withdrawn, the perinæum and scrotum were freely incised. Retention does not appear to have continued so long as usual, for the urine flowed by the wound on the following day. On the twenty-ninth day after the accident, the urine passed almost entirely by the urethra, but in a very small stream. Great contraction was found, upon examination, to exist at the cicatrix; but Desault succeeded, with considerable force, in conducting a small silver catheter into the bladder. At this time, a little urine still came from the wound which had been made in the perinæum. In three days, an instrument of larger size was introduced, and allowed to remain for some time. In three days more, an elastic gum catheter was substituted for the metallic one, and the patient began to move about. He left the Hotel Dieu on the eighty-fifth day, the wound being completely healed, and his stream of urine strong* and copious.

This case is contrasted,† by the French surgeon, with another which occurred in the Leeds infirmary. The injury was received in the usual manner, but it appears to be doubtful, if the urethra had really given way at the time of the accident. No instrument could be passed along the urethra, and the

* Les urines sortoient a gros jet et en faisant l'arcade.

† *Oeuvres, &c.* p. 211, and *Medical Communications*, vol. ii. p. 290.

bladder was punctured above the pubes. Suppuration took place in the contused perinæum, an incision was at length made, and about three weeks after the accident had happened, urine began to trickle in small quantities from the wound. At the termination of other three weeks, when the patient endeavoured to make water, very little made its appearance at the natural orifice, but nearly all of it escaped by the perinæum. In five weeks more, both wounds were healed, and all the urine was voided by the orifice of the urethra. He returned, however, to the infirmary, at the expiration of a year, with fistula in perinæo, and Bichat infers, with good reason I think, that this depended upon great contraction of the canal.

In Mr Travers' case, already referred to, an elastic gum catheter was retained in the bladder for six weeks. For some time before the termination of this period, none of the urine had escaped through the catheter, but took its course principally along the urethra, by the side of the instrument, while a small quantity passed in drops from the wound. The catheter was, however, still suffered to remain as a director to the urine, and for the purpose of obtaining a complete re-establishment of the canal of its proper dimensions. The bladder becoming rather irritable, and the wound in the perinæum painful, the catheter was at length removed, and found coated and lined with a thick deposit of uric acid, for about two inches from the extremity, which had lodged in the bladder. The

removal was followed by a little hemorrhage from the urethra, which soon ceased. In a very few days, the irritability of the bladder had subsided, the wound was healthy and granulating, and nearly one half had cicatrized. Less urine passed through the wound since the removal of the catheter. In the course of another month, the wound had completely cicatrized, except at a pin's point opening, through which two or three drops of urine, at the most, escaped during the day. The stream of urine was as large, and passed as freely, as before the operation. By the application of lunar caustic to the opening, it healed in a few days.

In Mr Green's case, a silver catheter was retained in the bladder for nearly four weeks. It was cleaned only once, and did not appear to interfere at all with the reparatory processes. The patient being then obliged to leave the hospital, an elastic gum catheter was substituted for the silver, and he was directed to wear it till the wound had completely healed. At this time, the granulations filled the wound, and were on the same level as the perinæum. Cicatrization to some extent had taken place at the extremity of the incision, and the same process was going on at the edges.

In one of Mr Earle's cases, an elastic gum catheter was retained in the bladder for a few days, and then discontinued. "The wound suppurated kindly, and speedily healed. It was necessary for some time to pass bougies to counteract the effect of the contraction at the cicatrized portion of the urethra."

In the other case, no instrument could be passed into the bladder, but every alarming symptom subsided in a few days. Nineteen days after the accident, "a good sized metallic bougie—No. 12—was introduced. On reaching the situation of the wound, it met with some resistance, which was readily overcome, and the instrument passed on without difficulty into the bladder. On withdrawing the bougie, the patient passed some water through the natural passage. The bougie was introduced every second day; the wound in the perinæum rapidly healed, and was closed within four weeks after the accident."

In the case related by Sir C. Bell, a silver catheter was retained in the bladder for some time. The wound suppurated and closed, but broke out again, discharged urine and matter, and again it closed. It was believed that a pliable gum catheter would have a happier effect; but the aperture still remained fistulous. A large hollow bougie was then introduced three times a-day, and, under this plan, the young man got entirely well.

It is not easy to deduce, from these few examples, any rule of procedure which can be followed invariably. I believe that in many cases, much may be done towards preventing great constriction of the injured canal by means of instruments, when carefully and judiciously employed. But there are peculiarities in almost every case, which demand our unbiassed and attentive observation during the whole

progress of the cure.* We see, for instance, that in one case, an elastic gum catheter produces no irritation at all; in another, it is first beneficial and then injurious; in a third, it induces disease in the bladder, and arrests the healing processes; while in a fourth case, the wound heals more rapidly than usual without any instrument whatsoever being employed.

We do not know the subsequent history of these cases, but it is not improbable, I think, reasoning from analogy, that the cicatrix has a tendency to go on contracting for a long period, after every thing has healed externally, so that it may be doubted if any important advantage is really gained in the end, by allowing the rent in the urethra to heal upon an instrument retained in the bladder. The occasional introduction of a bougie towards the termination of the cure will, perhaps, be found more advisable in the majority of cases; but still, if much difficulty be experienced at each performance of this operation, the other plan, after all, may give rise to less irritation.

The stricture caused by a cicatrix in the urethra is allowed, upon all hands, to be more obstinate and intractable than any other kind; but we need seldom despair, even at a distant period, of affording to our patients essential benefit by a steady and careful application of surgical means. In illustration of this remark, I beg leave to refer to a very

* Hey. *Surgery.* 3d Edit. p. 413.

interesting case in Mr Howship's Treatise on Diseases of the Urinary Organs.*

Before bringing this short Essay to a conclusion, it may be proper to say a few words upon injuries of that portion of the urethra which is anterior to the perinæum. These are neither so commonly met with, nor, for the most part, so serious in their nature. Retention of urine occasionally supervenes at the time, especially when great external violence has produced the injury; but it can very seldom happen, either that this shall proceed to a dangerous extent, or that we shall fail in our endeavours to introduce a catheter. The same principles of treatment must direct our surgical proceedings as in the other cases of injured urethra. There is little room, in most instances, for operative interference, and Nature, if left to her own resources, will speedily effect a cure. A simple incised wound of the urethra, whether it be made designedly by the surgeon in his operations, or be the result of accident, generally cicatrizes firmly, with little or no contraction of the canal; so that calculi, and other foreign bodies, when they become impacted at any part of the passage, are often extracted by incision, with more facility and more safety than in any other way. But the following case will afford a better illustration than any vague or general state-

* *Treatise*, p. 286. case 50. It is interesting to contrast with this, the very different results which are produced by an opposite line of practice, even in the most dexterous and experienced hands. Vide Chopart, *Traité des Maladies Urinaires*, t. ii. p. 518.

ment, of what the Vis Medicatrix can really accomplish upon such occasions.

A fine healthy boy, about three years old, was brought to St Bartholomew's Hospital, on the morning of the 6th of May, 1834. It was believed by his mother, that he had fallen, while at play, upon a fragment of broken earthenware, which she had found covered with blood. A large clean wound of the integuments extended obliquely downwards, from the external abdominal ring of the right side to the lower part of the scrotum. The penis was completely divided through, at the point where the skin covering it is continuous with that of the scrotum ; and the distal portion of the organ was turned over to one side, being prevented from falling off entirely, by a mere shred of skin which had not been divided. The aponeurosis of the external oblique muscle was cut through to a small extent in the vicinity of Poupart's ligament ; the spermatic chord was divided across, and the fascia of the thigh partially exposed. Copious bleeding took place from the spermatic artery, which had retracted within the abdominal ring, but was eventually secured. The vessels of the penis bled profusely, and it was necessary to tie more than one. The hemorrhage having subsided, a small-sized flexible catheter was passed through the detached portion of the penis, and from that into the other portion, as far as Camper's ligament ; but I failed in reaching the bladder, from the violent struggling of the child. Having then adjusted the

parts as correctly as possible upon the instrument, the two portions of the urethra were brought together with a single ligature of fine silk, and another was passed above and below through the divided sheath of the right corpus cavernosum. There was less necessity for this upon the left side, where the shred of integument still remained. The edges of the large wound in the skin were then approximated, by ligature, at the point of union with the scrotum, and also about an inch lower down.

Complete retention of urine continued till the evening of the 7th, when the catheter appeared to be suddenly forced from the urethra by the flow of urine. Part of it came by the natural orifice, but the greater proportion escaped by the wound. The catheter, was not reintroduced, and the tendency to retention did not continue.

May 10. A small quantity of urine still came by the natural orifice, the penis looked uncommonly well, and the child's general condition was much more favourable than we had any reason to anticipate.

19. All the urine had come away from the orifice of the urethra for nearly a week ; the penis appeared to have united, and the rest of the wound was granulating in a most healthy manner. About this time, an old woman in the next bed having died of erysipelas, the little patient had an attack of the disease in his penis and scrotum, which retarded very considerably the reparatory processes. But, notwithstanding this, he left the hospital quite

well on the 2d of July. The wound had been completely healed for more than a week ; the penis had recovered its natural appearance, and the urine flowed freely from the orifice of the urethra.*

It might be inferred, perhaps, from what has been said in the foregoing pages, that the retention of urine, in cases of injured urethra, may be overcome easily, and in every instance, by those surgical proceedings which I have already enumerated. But still it cannot be denied, that cases may present themselves occasionally, in which good surgeons, even the most dexterous and experienced, must relinquish their attempts, and have recourse to other and more serious measures for their patient's relief. In short, the bladder must be punctured without delay ; and it is, therefore, an interesting matter to possess some definite criteria as to the best mode in which this can be accomplished. The importance of this question, and its intimate connection with our present subject, will furnish my apology for trespassing still farther upon the time and patience of the College.

I do not intend to make any allusion to the various modes of puncturing from the perinæum, as formerly adopted, because they are now almost entirely abandoned, in this country at least, and have little, certainly, to recommend them, as last

* I saw the child about the middle of August in perfect health. The mother seemed very anxious to inform me, by various significant hints — what delicacy prevented her from stating more explicitly — that the occasional changes in dimension of the injured organ were not at all interfered with by the accident.

resources, in those complicated injuries of the urethra and perinæum, where simpler proceedings have already failed. But I am far from including among these operations the very excellent measure of opening the urethra behind the obstruction, which is now much recommended in obstinate cases of retention from permanent stricture, by many of our most distinguished surgeons. To this operation I shall again refer, after the other modes of relieving the bladder have been briefly considered.

A few unfortunate cases very naturally make a deep impression at all times; and this impression gains additional strength, when a change in our mode of practice is followed by corresponding success. But we are too apt, upon such occasions, to condemn or to applaud with undue precipitation; and hence it happens, not unfrequently, both in surgery and medicine, that certain remedial measures are preferred and employed by particular men, to the exclusion of other resources equally safe, and perhaps equally efficacious. This tendency is exemplified in the matter before us, for almost every surgeon has his own favourite mode of puncturing the bladder. But it will appear, I believe, upon dispassionate inquiry, that no single operation is equally well adapted to every case.

An enlarged condition of the prostate gland is a very common and most distressing cause of retention in those who are advanced in years. The nature and effects of this disease are now better understood than formerly, and, in consequence, a necessity for

puncturing the bladder in such cases, seldom, if ever, exists. But still it is more than probable, that even the most dexterous and experienced operator may occasionally not succeed in passing the catheter, and be compelled to empty the bladder in some other way. It is obvious, that to puncture that viscus from the rectum, in the usual manner, is here entirely out of the question, from the enlarged and diseased condition of the prostate gland. The gland itself might, indeed, be transfixed by the trocar, and, I believe, that this has been done with success; but the procedure seems likely to be both accompanied and followed by more than one disadvantage. Without presuming to speculate upon the probable ill effects of this operation, I may venture to suggest, that great uncertainty will often attend its very performance, from the unequal enlargement of the lobes of the prostate gland in different cases,* from the consequent irregularity in the form, and course, and dimensions of the prostatic urethra, to say nothing at all of the morbid thickness and solidity of the gland itself.

The bladder has been commonly punctured, I believe, in such cases, above the pubes; and instances are recorded where an artificial opening has been maintained in that situation for months and years. But to this plan there is one great objection, which can hardly be set aside by any supposed advantages. The opening which we make may rescue, indeed,

* *Wilson on the Urinary Organs*, Lect. 12, p. 335.

our patient at the time, but is so unfavourably situated as never to admit of the bladder being emptied completely; and hence it happens, that the subsequent accumulation of calculous matter within it is far from a rare termination to these unfortunate cases. The original disease in the prostate becomes more and more inveterate, and our patient drags on his declining years in pain and discomfort, with an artificial opening into his bladder, which has prolonged without relieving his sufferings.

I have already said, that the bladder may be relieved, in almost every case of enlarged prostate, by means of the catheter alone. The curvature of the instrument employed for this purpose must be long and ample, from the anatomical change which has taken place in the prostatic urethra. The obstacle to its introduction exists in this portion of the canal, but is seldom or never encountered till the point of our instrument has almost reached its destination, and approaches the bladder. Now, the large and firm catheter being thus securely lodged in the urethra, and supported on every side by the solid tissue of the prostate,—might it not be carried onwards to the bladder, through any remaining obstruction, with little injury to the parts concerned, or risk of future inconvenience?* This appears to

* Mr Liston has suggested an instrument which he conceives to be better adapted for this purpose than the catheter. It consists of "a long canula or catheter, with open end very slightly curved towards the extremity, provided with two wires, one blunt and bulbous at the extremity, the other pointed as a trocar,—both made so as to project a short way beyond the end of the canula. The canula is passed on to

be a less formidable and a much safer operation than that "forcing of the stricture"* which is sometimes admissible in disease of the membranous portion, where the slightest deviation, to one side or another, may not only frustrate all our endeavours at the time, but entail upon the unfortunate sufferer much additional pain and anxiety.

I have reason to believe that the prostate has been frequently pierced in this way with good effect, in cases where an instrument could not be otherwise introduced. But of course, no surgeon would think of doing so at all, till every other device had been fairly tried; and, even then, he would proceed with every care and caution which his anatomical knowledge might suggest.

Stricture in the urethra is not an unusual companion of enlargement of the prostate gland; and, should obstinate retention of urine suddenly supervene under this complication of evils, the bladder might be then punctured above the pubes with more advantage than in any other situation.

There is one great point of distinction between enlargement of the prostate gland and other causes of retention of urine, which it is desirable to bear in mind during the prosecution of this inquiry. It is this: The enlarged prostate is a permanent evil,

the resisting body, its orifice occupied by the bulbous wire, which is then withdrawn, and its place supplied by the trocar, the instrument being held steady in the proper direction. The trocar or stilet is pushed forwards along with the canula; the former is then withdrawn, and the latter retained."—*Elements of Surgery*, vol. iii. p. 140.

* C. Bell's *Treatise, &c.* p. 145.

which we may palliate, but can seldom, if ever, remove; while almost every other cause of retention will either disappear spontaneously, or yield to appropriate treatment. In the one class of cases, our opening in the bladder is intended, or at least expected, to remain during life; in the other, it is merely a temporary resource; so that objections which are felt to be strong against the performance of this or of that operation in enlargement of the prostate gland, may be set aside altogether, when we have to deal only with strictures, or mechanical obstruction, or lacerations of the urethra.

Admitting the soundness of this distinction, I would overlook an objection previously urged against the puncture above the pubes, and give the preference to it over that by the rectum in almost every case of retention from temporary causes. Both of these operations may be accomplished, in general, with equal facility, and with little pain; but in the former, if properly conducted, there is no risk of injury to any important organ, while in the other, no anatomical knowledge, and no dexterity, can secure either one or both of the vasa deferentia from serious lesion.* The fear of urinary infiltration in puncturing above the pubes, which has been sedulously transmitted from one author to another, meets with little confirmation from the records of experience; and almost all the other inconveniences so often enumerated are seldom met

* Colles, *Surgical Anatomy*, p. 183.

with in actual practice.* This operation is free, also, from those distressing effects which a communication between the bladder and rectum has occasionally produced; and Sir Astley Cooper decidedly condemns the latter mode of procedure, because he has seen a great number of instances in which the rectum has been brought into a state of severe disease in consequence of this operation.†

In addition to this, Mr Abernethy is of opinion, from repeated experience, "that in some distended bladders there is a kind of recession of them from the perinæum, and that where they become distended they ascend proportionally higher into the abdomen." The same observation is repeated by the Baron Boyer, and also brought forward as an occasional obstacle to the safe performance of puncture by the rectum.‡ On the other hand, the operation above the pubes is inadmissible in cases where, from various causes, the bladder does not ascend as usual, when distended, into the hypogastric region.

I already alluded to an operation much recommended by many of our leading authorities, in obstinate retention of urine from permanent stricture. When we have reason to expect a long and uncertain process of cure under the use of ordinary

* Abernethy, *Surgical Observations*. Sharp, *Critical Inquiry*, p. 127.

† Lect. XLV. p, 372.

‡ *Traité des Maladies Chirurgicales*, t. ix. p. 160.

means, and are obliged, at the same time, to relieve our patient without delay, by emptying his bladder; this can be done in no way more effectually than by opening the urethra itself behind the obstruction.* In many cases, no other proceeding will be required, for the urine is thus evacuated, and a free opening established in a depending situation, by means of which, the painfully distended bladder and the diseased urethra are freed from a continued source of irritation, and suffered to resume, in some degree, their healthy functions. Should the contracted portion of the urethra have become more than usually firm and impervious, either from long neglect, or hurtful interference, or both in succession, we may complete the foregoing operation by dividing the stricture itself, by conveying a catheter as far as the bladder, and then retaining it in that situation. But more or less difficulty must always be expected in the performance of this additional part of the operation, and it cannot, therefore, be safely undertaken in many protracted cases of diseased urethra. Patients who have been long afflicted with these distressing maladies are, generally speaking, of all others, the least able to undergo a severe and fatiguing operation; and it is only by careful observation and experience that the surgeon can accurately distinguish and select the appropriate cases.

With regard, then, to this important question of

* Cooper's Lectures, p. 374. C. Bell, Treatise, p. 179. Liston, p. 135. J. H. Green.—*Lancet, Nov.* 1827.

puncturing the bladder, we are warranted, I think, in forming the following conclusions :—

In cases of enlarged prostate gland, puncturing the bladder, though seldom if ever required, may be effected, with most advantage, from the natural passage.

In cases where an obstinate retention of urine depends upon causes of a temporary nature, it is better, when all other means have failed, to puncture the bladder above the pubes than from the rectum.

In retention of urine, from long continued and extensive disease in the urethra, great advantage will be gained in the majority of instances, by opening the canal itself behind the obstruction ; but the bladder may be also punctured above the pubes with propriety and good prospect of success, in less inveterate and more promising cases.